USSR UDC 535.33

PETROV, V. A., RADEYKEVYTS, T. Ye.

"Installation for Determination of Integral Normal Radiation Capacity in the 600-1500°K Temperature Interval"

Teplofizika Vysokikh Temperatur, Vol 9, No 6, 1971, p. 1253-1259.

Abstract: A design is described for an installation for determination of the normal integral radiative capacity of solids in the 600-1500°K temperature interval using a semiconductor bolometer as a radiation receiver. Experimental data are produced on the radiative capacity of molybdenum.

1/1

USSR UDC 621.317.331:536.45

PETROV, V. A., PETROVA, I. I., CHEKHOVSKOY, V. Ya., LYUKSHIN, Ye. N.

"Specific Electric Resistivity of Pyrographite"

Moscow, Teplofizika Vysokikh Temperatur, Vol. 9, No. 2, Mar-Apr, 71, p. 302-305.

Abstract: Results are presented from an experimental determination of the specific electric resistivity of pyrographite. The specific resistivity in the direction parallel to the precipitation surface is determined in the 300-2200°K temperature interval, the resistivity in the direction perpendicular to this surface -- in the 300-1800°K temperature interval. The data produced are compared with the data of other authors.

1/1

Television

USSR UDC 621.397.238:621.397.62

KOROBKOV, L. A., TSIRLIN, V. M., SHESTAKOV, Yu. N., PETROV, V. A., PALITSKIY, V. M., KHOROBRYKH, V. T., BEREZIN, I. I.

"A Device for Reception of Television Image Signals With Accompanying Audio"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 36, Soviet Patent No 288028, class 21, filed 19 Apr 67, published 3 Dec 70, p 52

Translation: This Author's Certificate introduces a device for reception of television image signals with accompanying audio combined in a single channel of a television system. The device contains a synchropulse selector, sound and image separation modules, and modules for demodulating the audio channel signals. As a distinguishing feature of the patent, the device is designed for reducing transient interference and increasing the resistance to interference of the accompanying audio channel. Connected at the input of the installation are two devices for restoring the DC component of the video signal. One of these signal-restitution devices is connected to a device for synchromixture regeneration through an electronic switch controlled by a signal from the synchropulse selector. Signals from the synchropulse selector and synchrogenerator are sent to the device for

USSR

KOROBKOV, L. A., et al., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, 1970, No 36, Soviet Patent No 288028, class 21, filed 19 Apr 67, published 3 Dec 70, p 52

synchromixture regeneration. The second signal-restitution device is connected to a code-pulse demodulator and an amplifier through an electronic switch controlled by a signal from the synchropulse selector. The signal from the amplifier is sent to the output of the device through an optimum low-frequency filter and a bilateral clipper with low-frequency filter. Priority dates from 2 March 1967.

2/2

USSR UDC 621.735.032

VORONTSOV, V. K., MOSHKOV, V. I., PETROV, V. A., and CHEKHOVA, L. I.

"On the Effect of the Forging Reduction Ratio on the Macro and Micro-Structure of Heat-Resistant E1481 Steel"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 205-208

Translation: A study is made of the macro- and micro-structure of E1481 steel in all reductions of an ingot 500 millimeters in diameter and 1.17 tons in mass. It is established that during forging on flat hammer blocks to the point where the forging reduction ratio is nine, inadequate working of the central part of the ingot can be observed. The micro-structure is studied in the central and peripheral parts of the ingot. It is shown that the micro-structure of steel in forged pieces obtained with a forging reduction ratio less than nine is characterized by a microconsertal nature. The macro- and micro-structure of forged pieces forged in cut hammer blocks is studied, and the advantage of such technology from the point of view of cemented carbides and consertal nature is demonstrated. Four figures and two bibliographic entries.
1/1

USSR

UDC 620.171.5

POLUKHIN, P. I., VORONTSOV, V. K., MOSHKOV, V. I., and PETROV, V. A.

"Stress-Deformation State of a Round Billet During Drawing by Flat, Combined, and Cut Hammer Blocks"

Plasticheskaya Deformatsiya Metallov i Splavov, Moscow, No 64, "Metallurgiya," 1970, pp 199-205

Translation: Using the optically sensitive coding method, a comparison was made of the stress-deformed state of round billets during drawing by flat, combined, and cut hammer blocks. It is shown that the use of combined and cut hammer blocks in forging round ingots is more expedient. The article gives practical recommendations on the selection of cut hammer blocks. Six figures and five bibliographic entries.

1/1

USSR UDC 536.2

CHEKHOVSKOY, V. Ya., PETROV, V. A., PETROVA, I. I., and LYUKSHIN, E. N.

"Heat Conductivity of Pyrographite at High Temperatures"

Moscow, Teplofizika Vysokih Temperatur, Akademiya Nauk SSSR, Vol 9, No 1, Jan-Feb 1971, pp 80-81

Abstract: The specimens of pyrographite used to determine its heat conductivity were of tubular form, they were obtained by precipitation from methane at 2100°C temperature. The outside diameter of the tubes was 12 millimeter, wall thickness 1 and 2 millimeter. The specimen was heated by electric current passing through it, the heat generated was determined by measuring the current and the voltage drop.

The coefficient of heat conductivity in the radial direction was determined in the range of 1200 to 2500°K.

The results are compared with those obtained by other authors. The discrepancies are quite high. This is apparently due to differences in micro and macro structure of pyrographite, which depends on precipitation temperature, heat treatment, specimen geometry and other factors. The discrepancies

1/2

USSR

CHEKHOVSKOY, V. Ya., et al., Teplofizika Vysokih Temperatur, Akademiya Nauk SSSR, Vol 9, No 1, Jan-Feb 1971, pp 80-81

are also caused by systematic errors connected with different experimental methods.

The error analysis of the obtained results shows that the maximum relative systematic error in determining the coefficient of heat conductivity is 15 to 16%.

1/2 029 UNCLASSIFIED PROCESSING DATE--16OCT70

TITLE--THEORY OF THE DEFORMATION HARDENING OF ALKALIMETAL HALIDE CRYSTALS DURING SINGLE SLIP -U-

AUTHOR-(02)-VLADIMIROV, V.I., PETROV, V.A.

COUNTRY OF INFO--USSR

SOURCE--FIZ. TVERD. TELA 1970, 12(1), 308-10

DATE PUBLISHED--------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--CRYSTAL DEFORMATION, CRYSTAL DISLOCATION PHENOMENON, WORK HARDENING, SHEAR STRESS, ALKALI METAL HALIDE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1988/0049 STEP NO--UR/0181/70/012/001/0308/0310

CIRC ACCESSION NO--AP0105148

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--16OCT70

2/2 029

CIRC ACCESSION NO--AP0105148

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE DISLOCATION MULTIPLICATION MODEL IS APPLIED TO THE CALCN. OF THE RANGE OF HARDENING WHEN THE BROADENED BANDS COVER THE ENTIRE CRYSTAL. THE DISLOCATION STRUCTURE OF THE CRYSTAL AT THE STAGE OF HARDENING CONSISTS OF SCREW AND EDGE DILOCATIONS DISTRIBUTED THROUGHOUT THE VOL. SCREW DIPOLES ARE FORMED BY INTERACTING SCREW DISLOCATIONS TRAVERSING THE ENTIRE CRYSTAL. EDGE DIPOLES ARE PRODUCED BY THE DOUBLE TRANSVERSE SLIP (EJECTION) OF SECTIONS OF SCREW DISLOCATIONS. WHEN EXTERNAL SHEAR STRESS IS INCREASED, SCREW DIPOLES ARE DECOMPD. AND CHANGE INTO MOBILE DISLOCATIONS. THE CRIT. HEIGHT OF THE EJECTION IS DECREASED, AND AS A RESULT A PART OF THE EDGE DIPOLES IS ACTIVATED CHANGING INTO SOURCES OF DISLOCATIONS. MOBILE SCREW DISLOCATIONS, FORMED FROM SCREW DIPOLE DECOMPN. AND EDGE DIPOLE ACTIVATION, PERFECT THE EJECTIONS. THUS, THE ABOVE MODEL DECSRIBES WELL NOT ONLY BROADENING OF INDIVIDUAL GLIDE BANDS BUT ALSO THE DEFORMATION IN THE REGION OF HARDENING, IN THE CASE WHEN ONLY ONE SYSTEM OF SLIP IS AT WORK. FACILITY: FIZ. TEKH. INST. IM. IOFFE, LENINGRAD, USSR.

UNCLASSIFIED

P

UDC 621.791.1

USSR

ABRAMOV, V. V., KARAKOZOV, E. S., and PETROV, V. A., Moscow

"Kinetics of Compound Formation in Welding in the Solid State by Static and Cyclic Loading with Heating"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 70, pp 107-113

Abstract: Formation of a compound in solid-state welding, when the driving forces are temperature and pressure, occurs at active centers by plastic deformation in new main stages: 1) formation of physical contact, and 2) activation and chemical reaction. This process can be represented as a chemical reaction due to which energetically stable configurations of electrons belonging to unexcited atoms deep in the solid form between atoms of the uniting surfaces. In bringing together surfaces being united, each of which has no oxide layer, but has a multiatomic chemically absorbed layer of ambient environment atoms, for example, oxygen (i.e., consists of an electrically neutral adsorption complex (Me-O)), at some distance equilibrium of molecular (van der Waals) forces of repulsion and attraction will be established. Processes ensuring these conditions for solid-state welding, when the total energy level of the system of surface atoms rises via thermal and mechanical activation, can be: 1) Surfacing into the physical contact zone of crystal lattice defects. Energy freed when defects surface can prove adequate for rupture of bonds in the Me-O complexes in the region adjoining the defect surfacing

1/2

USSR

ABRAMOV, V. V., et al., Fizika i Khimiya Obrabotki Materialov, No 4, Jul-Aug 70, p
pp 107-113

site. 2. Thermal fluctuations, resulting in the metal atom at some moment in time acquiring energy adequate for breaking the bonds with oxygen. An important consequence of plastic deformation behavior for materials to which cyclic external loads are applied is that any variation in the rate of plastic deformation of the materials being combined during their solid-state welding by pressure with heating must vary the rate of buildup of physical contact and conditions for activation of atoms of the surfaces being combined.

2/2

USSR UDC: 536.3

PETROV, V. A., REZNIK, V. Yu., Institute of High Temperatures, Academy of Sciences of the USSR

"Integral Normal Emissivity of Grade 'KI' Quartz Glass at High Temperatures"

Moscow, Teplofizika Vysokikh Temperatur, Vol 10, No 4, Jul/Aug 72, pp 778-782

Abstract: The authors discuss errors in the measurement of the integral emissivity of partially transparent materials and give the results of measurement of the normal integral emissivity of grade KI quartz glass for five thicknesses from 2 to 10 mm at temperatures of 600-1400°K. The error of the experimental data is 4.35%. A comparison with data in the literature on Corning glass No 7940 shows good agreement.

1/1

USSR

PETROV, V. A. (Institute of Radio Engineering and Electronics of the USSR Academy of Sciences, Moscow)

"Modulation of the Region of Optical Absorption of a Quantum Film by an Electrical Field"

Leningrad, Fizika Tverdogo Tela; October, 1972; pp 2894-6

ABSTRACT: The effect of the field in a thin semiconductor film is studied. It is shown that a strong, lateral electrical field leads to a shift in the region of optical absorption toward the short-wave side as a result of the quantization of the electron spectrum by an external field. This quantization has nothing in common with the Stark effect but is related entirely to the finite thickness of the sample. The cases of electron concentration and depletion in the sample are considered. Evaluations for the parameters of InSb films show that when L ~ 500 Å, V ~ 1-10 v (L is the thickness of the film, V is the voltage on the capacitor), the region shifts 10^{-2} ev.

The article includes five equations and two figures. There are four references.

1/1

7

USSR

BURTOV, A. I., GRUSHVITSKIY, R. I., METTER, E. Ya., PETROV, V. A., PLATONOV, V. V., SAVUTKIN, V. V., VEDESHENKOV, V. A., VOLKOV, A. F., ZENKIN, V. D., LIKHONINSKIY, V. S., and SOROKIN, G. K.

"Computer Device"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 27, 1972, p 162, No (11) 351216

Translation: This patent describes a computing device containing resolving modules with decoupling cells at the power supply inputs. It also has a control block connected to the inputs of a switching block and an efficiency indicator. Every output of the switching block is connected to the control input of one of the decoupling cells, thus improving the reliability of the device.

USSR

UDC 534

BANAKH, L. YA., PERMINOV, M. D., PETROV, V. D., SINEV, A. V.

"Methods of Calculating the Rigidity, the Inertia and Damping of Matrices for Complex Three-Dimensional Systems"

V sb. Vibroizolyatsiya mashin i vibrozashchita cheloveka-operatora (Vibration Insulation of Machines and Vibration Protection of the Human Operator--collection of works), Moscow, Nauka, 1973, pp 67-81 (from RZh--Mekhanika, No 6, Jun 73, Abstract No 6A154)

Translation: A study was made of the methods of calculating the rigidity, inertia and damping matrices required to construct the solution of natural and forced oscillations of dynamic models of complex three-dimensional mechanical structures. It is proposed that the real structural element is replaced by a spatial system of solid states and lumped masses joined to each other by elastic couplings of the beam element type and joined to the foundation by means of shock absorbers. The formulas were derived which permit definition of the complete rigidity matrix of the system using the rigidity characteristics of individual elastic elements and the coordinate transformation matrices. It is demonstrated that in order to determine the complete damping matrices it is possible to use analogous formulas. Methods of compiling the inertial matrices were analyzed for a spatial system of solid states, and a study was made of the characteristic features of

1/2

USSR

BANAKH, L. YA., et al., Vibroizolyatsiya mashin i vibrozashchita cheloveka-operatora Nauka, 1973, pp 67-81

calculating the matrices in the absence of inertial properties by a number of coordinates. A study was made of the problem of limiting the number of degrees of freedom in general case of the three-dimensional system. Several parameters of this restriction are presented. The bibliography has 7 entries.

2/2

USSR

UDC: 621.378.325

GORLANOV, A. V., KALININA, A. A., LYUBIMOV, V. V., ORLOVA, I. B., PETROV, V. F.

"Investigation of the Possibilities for Making Telescopic Laser Amplifiers With High Amplification Factors"

Minsk, Zhurnal Prikladnoy Spektroskopii, Vol 17, No 4, Oct 72, pp 617-622

Abstract: Based on the theory of unstable resonant cavities, an investigation is made into the feasibility of attaining high amplification factors ($\sim 10^5$) in telescopic laser amplifiers. It is shown that when a single GOS-1001 light source is used, a three-pass amplifier is optimum, while the optimum number of passes is two for an amplifier using two such light sources. An amplification factor of approximately 160 000-200 000 is achieved (for a weak signal).

1/1

Veterinary Medicine

USSR

UDC 619.614.9.47:636.4

BIRKAN, N. N. and PETROV, V. F., Vitebsk Institute of Veterinary Medicine

"Simultaneous Vaccination of Swine Against Cholera, Erysipelas, and Aujeszky's Disease"

Minsk, Izvestiya Akademii Nauk BSSR, Seriya Sel'skokhozyaystvennykh Nauk, No 4, 1972, pp 102-106

Abstract: Twenty-two piglets in the laboratory and 350 weanling piglets on a farm were simultaneously vaccinated against cholera, erysipelas, and Aujeszky's disease. The farm animals were vaccinated twice, the first time against cholera and erysipelas, the second time, 12 to 14 days later, against cholera, erysipelas, and Aujeszky's disease. The associated method of vaccination was used. Blood studies revealed the presence of immunity in the inoculated animals. The side affects produced by the mixtures of 2 and 3 vaccines were not cumulative or more intense than those produced by the monovaccine. Inoculation of some of the experimental animals with the agents of cholera, erysipelas, and Aujeszky's disease resulted in stable immunity to these infections 4 months afterward (observation period).

1/1

USSR UDC 621.378.325

VANYUKOV, M. P., GORLANOV, A. V., LYUBIMOV, V. V., ORLOVA, I. B., PETROV, V. F.

"A Neodymium Glass Multichannel Monopulse Laser"

Moscow, Kvantovaya Elektronika, Sbornik Statey, No 4, "Sovetskoye Radio", 1971, pp 117-120

Abstract: The authors consider certain problems in the design of multichannel monopulse laser systems. An evaluation is made, and experimental data are presented on the influence which scattering of light in the gate has on the angular divergence of a beam from a laser with an unstable cavity. An experimental study is made of the limiting possibilities of a single-channel amplification system based on neodymium glass rods 45 mm in diameter and 600 mm long. A six-channel monopulse laser system is described with a total emission energy of 1 000 J and a pulse power of 15 GW. Four figures, bibliography of nine titles.

1/1

USSR UDC: 621.373:530.145.6

AVDEYEV, O. I., LYUBIMOV, V. V., PETROV, V. F.

"A Device for Automatic Alignment of the Mirrors in a Laser Cavity"

USSR Author's Certificate No 277136, filed 30 Jun 67, published 29 Oct 70 (from RZh-Radiotekhnika, No 6, Jun 71, Abstract No 6D242 P)

Translation: A device is proposed for automatically aligning the mirrors of a laser cavity. To improve alignment precision and ensure automatic realignment during operation, a luminous-spot autocollimator equipped with a turret head with interchangeable oculars is connected to electric drives which control its position in space. In the image plane of the autocollimator spot is a split-disc modulator which carries a photomultiplier. The "blind" mirror of the resonator is connected to servodrives which move the mirror in space. On the shaft of an electric motor between the mirrors of the cavity is a disc with transparent sectors. The output of the photomultiplier is connected to an electronic circuit which includes a device for amplification and frequency separation of the signals from the mirrors, and phase detectors whose outputs are connected to the servos which control the position of the autocollimator for the "blind" mirror.
1/1

USSR UDC: 577.4

PETROV, V. G., FEDOTOVA, D. E.

"Expanded Method of D-Cubes as a Basis of Constructing Tests for Combination Schemes"

V sb. Vychisl. mashiny i programmir. (Computers and Programming--collection of works), Moscow, 1971, pp 26-56 (from RZh-Kibernetika, No 5, May 72, Abstract No 5V363)

Translation: The concepts of the table of coverings, the table of minimum coverings and the table of D-cubes are introduced for functions of logic algebra. The first two coincide with the concepts of disjunctive normal forms and minimum disjunctive normal forms for functions of logic algebra. In this paper an algorithm is developed for obtaining a table of minimum coverings for arbitrary functions of logic algebra, and a comparative analysis is given of the effectiveness of assigning a function by means of a table of coverings. Tables of coverings and tables of D-cubes are presented for functions of two variables. The authors point out that the apparatus of D-cube calculus is used for diagnosing digital systems. Kh. Madatyan.

1/1

USSR

UDC: 8.74

PETROV, V. G., FEDOTOVA, D. Ye.

"Formulation and Methods of Solving Problems in the Field of Programmed Checking and Diagnosis of Digital Systems"

V sb. Vychisl. mashiny i programmir. (Computers and Programming--collection of works), Moscow, 1971, pp 5-25 (from RZh-Kibernetika, No 6, Jun 72, Abstract No 6V515)

Translation: The authors consider a set of program facilities and methods of organizing data processing which ensure effective utilization of the technical components of programmed control systems. Methods of organizing programmed control systems are divided into four classes: 1) the system of algorithms and programs which is inherent in all programmed control systems regardless of operating conditions; 2) formal (artificial) languages which are the basis of systems of program automation; 3) operational systems which determine the conditions of processing information in the programmed control system; 4) operational systems which determine the conditions of checking and diagnosis. The system of algorithms and programs contains finished algorithms and programs, a library of standard subprograms, and programs for solving various unique and repeated problems. The formal

USSR

PETROV, V. G., FEDOTOVA, D. Ye., Vychisl. metody i programmir., Moscow, 1971, pp 5-25

languages include two classes of languages: computer oriented and algorithmic. The operational systems which determine the conditions of processing information are subdivided into non-monitored (with manual control of computational processes) and monitored (with automatic coordination of the work of components of the computational process). The operational systems which determine the conditions of checking and diagnosis are divided into 1) systems for functional monitoring with tolerance check and with check by characteristic feature, and 2) preventative monitoring systems. The particulars of construction of the basic programmed methods for checking and diagnosing programmed control systems are considered.

USSR

UDC: 591.615+616.9-036.21

OLSUF'YEV, N. G., DOBROKHOTOV, B. P., DUNAYEVA, T. N., POKHELKINA, A. A., RODIONOVA, I. V., ARSEN'YEV, V. P., and PETROV, V. G., Tularemia Laboratory and Vectors Laboratory, Division of Infections with Natural-Foci, Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR, Moscow

"The Effect of Sanctuaries on Natural Foci of Infections"

Moscow, Zoologicheskiy Zhurnal, Vol 49, No 11, Nov 70, pp 1697-1704

Abstract: The Priokako-Terrasnyy Game Preserve in the southern part of Moskovskaya oblast has a varied fauna whose species composition and numbers are similar to those in natural forest biocenoses of the past. Wild ungulates and small mammals, particularly rodents, are very abundant. Studies conducted in 1968 and 1969 disclosed the presence of a great number of adult Dermacentor pictus and Ixodes ricinus ticks feeding on the ungulates. I. trianguliceps and I. apronophorus were less numerous. Microscopic examination revealed a number of microorganisms in the ticks: tularensis in D. pictus, tickborne encephalitis virus in I. ricinus and D. pictus, and Erysipelothrix rhusiopathiae, Listeria monocytogenes, and Pasteurella pseudotuberculosis in the rodents. Sanctuaries such as game preserves tend to maintain natural foci of infections because of the

USSR

OLSUF'YEV, N. G., et al, Zoologicheskiy Zhurnal, Vol 49, No 11, Nov 70, pp 1697-1704

relative constancy of the many populations of wild mammals and the large numbers of Ixodes ticks.

2/2

USSR

UDC 595.42

PETROV, V. G., Tularemia Laboratory, Institute of Epidemiology and Microbiology, Academy of Medical Sciences USSR

"Role of the Tick Ornithonyssus bacoti Hirst in the Storage and Transmission of the Tularemia Pathogen to White Mice"

Leningrad, Parazitologiya, No 1, 1971, pp 7-14

Abstract: In several experiments in which the alimentary route of infection was blocked, all the experimental mice survived. In a third experiment where infected ticks could be eaten or crushed on the animal's skin, all the mice died of tularemia. A fourth experiment showed that infected adult ticks did not transmit P. tularensis to their offspring, thus ruling out the transovarial route of transmission. The data confirm earlier studies of another tick (Hirstionyysus musculi) by the author which showed that white mice can become infected by swallowing ticks infected with tularemia bacteria. F. tularensis was found to multiply in O. bacoti in the course of metamorphosis from infected protonymphs to adults.

1/1

USSR

UDC: 8.74

PETROV, V. I., SADOMOV, Yu. B., editorial staff of "Avtomatika i vychisl. tekhn.", Academy of Sciences of the Latvian SSR

"Model of the System Comprised by a Human Operator and a Production Recorder"

Riga, Model' sistemy chelovek-operator—registrator proizvodstva (cf. English above), 1973, 12 pp ill. bibl. 3 titles (manuscript deposited in VINITI 16 Feb 73, No 5475-73 Dep.) (from RZh-Kibernetika, No 7, Jul 73, abstract No 7V641 DEP by the authors)

Translation: The degree of information distortion by existing peripheral systems for conversion, and by data processing systems is such that the probability of error in handling operational production control systems is still fairly high. In this connection, the principal share of errors falls to the peripheral systems for gathering primary information and transcribing it onto computer media. The statistical model of a peripheral system with generalized hardware takes account of the main stages of formation and transcription of information on the computer medium. The time for conversion of each number of the variable information, time

1/2

USSR

PETROV, V. I., SADOMOV, Yu. B., Model' sistemy chelovek-operator—registrator proizvodstva, 1973, No 5475-73 Dep.

expenditures on document conversion in the case of absence or presence of a detected error, and the probabilities of trouble-free operation of the input and output devices of the production recorder are realized in the algorithm in accordance with conventional expressions. Failures of the human operator, keyboard and other devices, and also the frequencies of error detection are assigned by a frequency matrix.

The results of realization of the model of a peripheral system on a universal digital computer showed fairly high efficacy and convenience in studying different modifications of the parameters and structures of the system.

2/2

AR9051824 (c) BIOLOGICAL ABSTRACTS 10-69

YA 35635

111124. LIBERMAN, A. N., P. R. VAINSHTEIN, E. M. KRISYUK, E. N. BONDAREVA, I. E. BRONSHTEIN, V. I. PETROV, L. Z. RABKIN, M. V. SAFRONOVA, and M. B. SHMONSKAYA. Voprosy gigieny truda i normirovaniya myagkikh rentgenovykh luchei. [Questions of industrial hygiene and standardizing soft X-rays.] TR LENINGRAD NAUCH-ISSLED INST RADIAT GIG 3. 102-111. 1967. From: REF ZH BIOL, 1968, No. 9S195. (Translation)--These are the results of investigations of the radiation-hygiene characteristics of working conditions in work with sources of soft X-irradiation (10 kiloelectron volts and more) using a special device at the base of the individual DK-0.2 dosimeter. The sensitivity of such a dosimeter is 4-5 times more than that of the DK-0.2 one. The biological effectiveness of soft X-rays was studied in experiments on animals (white mice, guinea pigs, and white rats). Changes in the main indicators of radiation sickness owing to soft X-rays are unidirectional with the action of hard X-rays. The values of the coefficients indicating the relationship between the exposition doses of soft and hard X-irradiation, which cause the same biological effects, were determined. Despite the substantial differences in the values of the exposition LD_{50} at different energies of X-rays, the average doses absorbed in mice within the limits of fallibility the determinations were the same (± 20%). Based on the results of these experimental studies it is suggested that the temporary maximum permissible dose for soft X-rays at a range of energy of 15-25 kiloelectron volts equal to 15 rad per yr.

20 57 1 26

1/1

1949 0135

2

AP0011942 CHEMICAL ABST. 12/69 UR0327

128546r Desalting salt water by artificial freezing. Rutgaizer, E. M.; Seiitkurbanov, S.; Petrov, [illegible] (USSR). *Kholodil. Sanit. Tekh.* 1969, (6), 1–4 (Russ). Freezing by means of liq. hydrocarbons and a mixt. of propane and butane was applied for desalting salt water. Upon cooling and crystg. salt water, the coeff. of heat exchange in the contact evaporator did not practically depend on the degree of the water salinity. The content of salt in ice is mainly dependent on the water salt content which is almost twice its content, e.g. when the initial soln. concn. is 3.5%, the content of salt in humid ice is 1.6%. The effectiveness of the freezing process increases if brine circulation is applied. The method of ice sepn. from the mother liquor by centrifuging and washing out was tested under lab. condtions. The optimum rate of revolutions was 2000–3000 rpm. and the duration of centrifuging 2–3 min. J. Jarzebowska

19570632

AM0012016 P UR0000

26
5
32

Rabinovich,L.V.; Petrov,V.I.; Terskov,Y.G.; Sushkov,S.A. Pankratyev,L.D.

Designing Tracking Systems (Proyektirovaniye sledyashchikh sistem) Moscow. Mashinostroyeniye. 1969. 498 pp (Kay)

TABLE OF CONTENTS:

4

19570726

AM0012016

The textbook contains theoretic foundations and methods to calculate and design tracking systems. It is designed for students of the Course "Control Systems of Flying Apparatuses"; it can be useful to industrial engineers.

2/2

19570727

USSR

UDC 577.4

PEROV, V. I.

"Methods of Solving the Problems of Optimizing Combination Procedures of Finding Failures"

V sb. Tekhn. diagnostika (Technical Diagnostics -- collection of works), Moscow, Nauka Press, 1972, pp 275-279 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V418)

No abstract

1/1

USSR

UDC 614.3/.4:681.327.4

PETROV, V. I., Republic Sanitary Epidemiological Station, Ministry of Health, Ukrainian SSR, Kiev

"Pernanent Punch Cards in the Administration of the Sanitary-Epidemiological Service"

Moscow, Gigiyena i Sanitariya, No 10, 1971, pp 61-64

Abstract: To permit closer administrative control of the operations of the 700 sanitary epidemiological stations in the Ukraine, the author devised a descriptor information retrieval system that falls between an information retrieval system requiring the use of a computer and a nondescriptor type of system in which there are few search signs and the retrieval is done by successive checking of the cards (as in libraries). Two types of "permanent" information is involved: one relating to equipment and facilities, the other relating to personnel. Only 15 descriptors have been chosen and with their help it is possible to get the answer to a question like "How many rayon sanitary epidemiological stations are there in the republic at which 5 or more physicians are employed" in 2 to 3 hours. The operation of the proposed system is comparatively simple and can be mastered in a few days by physicians and intermediate medical workers. Present plans call for its introduction

1/2

USSR

PETROV, V. I., Gigiyena i Sanitariya, No 10, 1971, pp 61-64

into the ministries of health of the Kazakh and Armenian republics in the near future.

2/2

AP0037282 SCI. ABST. SER. C 3 70 WR 0144

P

2984 **The selection and correction of deviation programmes to control the final state.** V.I.Petrov.
Izv. VUZ SSSR Elektromekh. (USSR), no.8, p.892-6 (1969). In Russian.
It is shown that the selection programme must contain a particular solution of Voltaire's equation. Correction programmes are derived in discrete forms by the method of regulating functions. A similar treatment is used for the examination of integrating and combinatorial control.

1 4

1973021 3

2

UDC 621.039.524.2.034.3

USSR

LOMAKIN, S. S., MORDOVSKAYA, T. S., PANFILOV, G. G., PETROV, V. I., SAMOYLOV, P. S., and KHMYZOV, V. V.

"Measuring the Effective Neutron Temperature in Uranium-Graphite Reactors"

Moscow, Atomnaya Energiya, Vol 29, No 1, Jul 70, pp 36-37

Translation: A brief description is given for the technique used in measuring the effective neutron temperature in uranium-graphite reactors. The effective neutron temperature was measured by the integral method in the F-1 graphite research reactor using natural uranium and in the Pervaya (first) Atomic Electric Power Plant reactor in Obninsk. Ceramic activation detectors made of lutecium and manganese in the form of tablets 8 mm in diameter were used. The Westcott formalism modified for the case of detectors of finite thickness was used to process the results. The detectors were calibrated in a graphite prism with a thermal neutron spectrum. The activity of the detectors was measured on a scintillation γ-counter with a NaI (Tl) crystal and a PP-9 scaler which has an integral discriminator by means of which the corresponding thersholds were established. The measured saturation activities of the detectors, the cadmium

1/2

USSR

LOMAKIN, S. S., et al., Atomnaya Energoya, Vol 29, No 1, Jul 70, pp 36-37

ratio, and the calibration factor were used to determine the neutron temperature. The measurements in the F-1 reactor were taken in the center of the core. The neutron temperature $T_{neutron}$ averaged with respect to four measurements with different pairs of lutecium-manganeses detectors was 348 ± 10°K.

The measurements at the Pervaya Atomic Electric Power Plant were taken in an empty process tube; $T_{neutron}$ was 393 ± 12°K. On the basis of the experimental data obtained and the published experimental data on $T_{neutron}$ for uranium-graphite systems, the empirical relation between the neutron temperature $T_{neutron}$ and the temperature of the medium T_0 was refined:

$$T_{neutron} = T_0\left(1 + A\frac{\Sigma a(kT_0)}{\Sigma_s}\right),$$

where A = 16.5. The calculated value of A according to R. Coveqou for uranium-graphite systems is 11.

2/2

AA0051786 PETROV V.I. UR 0482

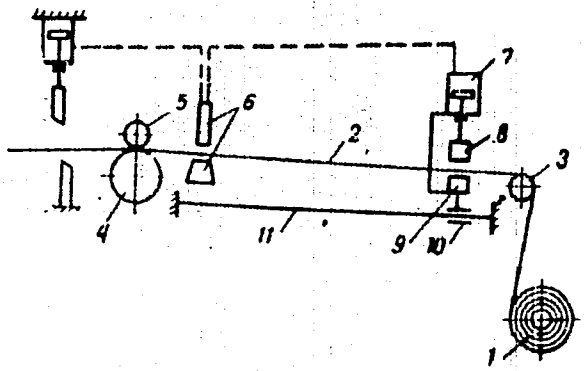
Soviet Inventions Illustrated, Section I Chemical, Derwent, 12/69

239538 AUTOMATIC RESISTANCE WELDER FOR THERMO-PLASTIC FILM rides on guides (10) for better synchronised movement. The film is reeled (1) off into strips (2) through the roller (3) using the pinch rollers (4,5). A photocell (6) responds to a mark on the film passing so as to pass a signal to the ram (7). The support member of the welding tool (8) presses the film to the counterpart member (9) and welds it. These two members are linked and on guides (10) round the bar (11) so that they both move with the film during welding A time relay de-energises the ram and breaks contact on expiry of the specified weld time. The cell issues the cut signal.
12.4.68. as 1232871/25-27, GRIGONIS, A.G. et al. (23.7.69) Bul. 11/18.3.69. Class 39a^2 Int. Cl. B 29c.

19820148

AA0051786

Authors: Grigonis, A.G.; Kalitis, R.A.; Petrov, V.I.; Yanat'yev, V.S.



19820149

AP9021880

IAA 8/69 UR 0114 3

A69-30571 #

FLOW DEFLECTION AT THE EXIT FROM THE WHEEL OF A CENTRIFUGAL PUMP [OTKLONENIE POTOKA NA VYKHODE KOLESA TSENTROBEZHNOGO NASOSA]

V. F. Chebaevskii, V. I. Petrov, B. I. Borovskii, and G. T. Voznyi.

Energomashinostroenie, vol. 15, Feb. 1969, p. 45, 46. 6 refs. In Russian.

Experimental study of the gas flow deflection at the wheel outlet in a centrifugal pump, for four types of wheels having different inlet and outlet vane angles. The results are in satisfactory agreement with results obtained by Cherniak (1966) on a computer. The correctness of a computer procedure proposed by Cherniak for calculating the flow deflection angle from the geometrical and operational parameters of the pump is confirmed.

V. Z.

29 (6) 3 38

1/1 1934 0919 4

AP9036640 METALS ABST. 9/69 WR0185

19 0786 Dislocation Structure of Plastically-Deformed [illegible] Silicon. I. V. Gridneva, Yu. V. Milʹman, V. I. Petrov, V. N. Trefilov, and S. I. Chugunova. Ukrain. [illegible] June 1969, 14, (6), 1602-1605 [in Russian].

The dislocation structure of *n*-type Si single crystals was studied after high-temp. compression under a constant load under vacuum at 900-1100 °C (degree of deformation 3-20%). Electron-microscope examination confirmed that after high degrees of compression a sharply-expressed cellular structure developed. On the basis of these results the temp. corresponding to the cold-shortness threshold of Si was determined (approx. 2/3 of the abs. m.p.); a similar relationship held in the case of Ge. 15 ref.--G. A.

AP9048701 SOVI. ABST. SER. A 10-69 0000

40329 On a stroboscopic Lorentz Microscopy. V.I.Petrov, G.V.Spivak (Moscow State Univ., U.S.S.R.).
Z. Angew. Phys. (Germany), vol.27 no.3, p.188-91 (July 1969). In English.
The stroboscopic transmission electrom microscope with an electron lock which provides the wide range pulse duration operating conditions is described. The processes of pulse magnetization of thin ferromagnetic films were under investigation in out-of-focus operating conditions.

1947 1395

AP0018271 CHEMICAL ABST. 1/70 U.R.S.S.

18226z Chemical-spectral method for determining zirconium and hafnium by using three-phase extraction systems. Zhivopistsev, V. P.; Makhnev, Yu. A.; Petrov, V. I.; Savina, O. I. (Perm. Gos. Univ., Perm, USSR). *Zavod. Lab.* 1969, 35(8), 902–3 (Russ). Zr and Hf are extd. from acidic solns. contg. NO_3^- with diantipyrylmethane. Th is used as an internal standard, and is specially introduced to be extd. together with Zr and Hf. The ext. is evapd. in air on the flat end of a C electrode. An ISP-28 spectrograph is used, with spark excitation at 2.5 A, 200 V, 0.02 μF, and 0.15 μH. The anal. line pairs are Zr 2678.632–Th 2870.410 and Hf 2638.710–Th 2870.410 Å. The errors for Zr and Hf are 5.6 and 7.4%, resp.

Abol-hassan K. Abdelaziz

KK

1/1

19601805

USSR

UDC: 541.49:546.799.3

YELESIN, A. A., ZAYTSEV, A. A., KARASEVA, V. A., NAZAROVA, I. I., PETUKHOVA, I. V.

"Synthesis of (Methyl Phenyl Phosphonyl) Methyl Phenyl Phosphonic Acid, and an Investigation of Complexing With Trivalent Ions of Americium, Curium and Promethium"

Leningrad, Radiokhimiya, Vol 14, No 3, 1972, pp 374-377

Abstract: The authors studied complexing of trivalent Am, Cm and Pm ions with an organophosphorus compound containing two P=O groups joined by a methyl bridge. This compound, (methylphenylphosphonyl)methylphenylphosphonic acid, was synthesized. The thermodynamic value of its dissociation constant was determined ($pK^0 = 2.04$). Complexing was studied by the ion-exchange method on KU-2 cation-exchange resin. The logarithms of the constants of stability for complexes of Am^{3+}, Cm^{3+} and Pm^{3+} in solutions with constant ionic strength of 0.2 (NH_4ClO_4) were 3.35, 3.35 and 3.40 respectively, which is appreciably higher than the corresponding values with phosphoric and methylphosphonic acids, and approaches the value of the constants with trimetaphosphoric acid. The additional stabilization of these complexes was attributed to the chelate effect associated with ring closure.
1/1

USSR

UDC 389.6.539.125.5.07:621.039.564.2

(3)

ARABEY, B. G., BOCHIN, V. P., GARAPOV, E. F., LOMAKIN, S. S., PETROV, V. I., SAMOYLOV, P. S., KHMYZOV, V. V.

"Standardization of Measurements of Neutron Flux Density in Nuclear Reactors"

Tr. Soyuz. NII Priborostr. [Works of Union Scientific Research Institute for Instrument Building], 1972, No 17, pp 3-8, (Translated from Referativnyy Zhurnal, Metrologiya i Izmeritel'naya Tekhnika, No 7, 1972, Abstract No 7.32.1364, from the Resume).

Translation: Problems of standardization of means and methods of measurement of neutron field parameters in nuclear reactors in order to provide unity and correctness of measurement of these parameters are discussed. One means of standardization is the use of activation detectors. Recommendations are presented for the composition of standard sets of activation detectors. It is suggested that a "standard" source of thermal neutrons based on the F-1 graphite reactor be used to calibrate detectors used for continuous measurements in reactors. The parameters of the neutron field in the reactor (arbitrary flux density, epithermal parameter, neutron gas temperature) are measured using activation detectors with errors of 2.5-3%. The use of the source described can allow calibration of neutron detectors with an accuracy of 4-7%.

1/1

USSR

UDC: 537.311.33

DREYMANIS, E. A., KLOTYN'SH, E. E., PETROV, V. K., Power Engineering Physics Institute, Academy of Sciences of the Latvian SSR

"The Faraday Effect in N-Type Gallium Arsenide in the Region of Intermediate Doping"

Riga, Izvestiya Akademii Nauk Latviyskoy SSR, Seriya Fizicheskikh i Tekhnicheskikh Nauk, No 5, 1972, pp 25-31

Abstract: An investigation was made of moderately heavily doped N-type gallium arsenide with a gradual reduction in the Fermi level by introducing copper as an impurity to act as an accpetor in compensating the initial donors. Measurements were made of the Hall effect, the transverse Nernst-Ettingshausen effect, the differential thermoelectromotive force and the Faraday effect on free carriers at 90-480 kelvins. It is shown that the measure of distortions of the conduction band must be considerable in gallium arsenide over a broad range of charge carrier concentrations. It is shown that when the Fermi level is lowered sufficiently by compensation, the effective mass of electrons depends on the degree of doping, i. e. on the overall concentration of impurity ions.

1/1

USSR

UDC: 518:519.3

BANICHUK, N. V., PETROV, V. M., and CHERNOUS'KO, F. L.

"Algorithm and Convergence Problems of the Method of Local Variations for Partial Derivative Situations"

Moscow, Zhurnal Vychislitel'noy Matematiki i Matematicheskoy Fiziki, No 1, 1973, pp 47-58

Abstract: The method of local variations for the numerical solution of variational problems was originally proposed in an article published by the last of the above-named authors in the same journal (5, No 4, 1965, pp 749-754). The present paper offers a number of new results in the development of this method for solving variational problems involving partial derivatives. An algorithm of the method is given for the minimization problem of a non-additive functional of arbitrarily general form together with some generalizations and modifications of the method. A standard program for the method is presented in the form of a procedure using the ALGOL 60 language for variational problems with a nonadditive functional depending on functions of two variables. The final section of the paper is devoted to convergence questions and error evaluations.

1/1

USSR

PETROV, V. M., Institute of Steel and Alloys, Moscow

"Effect of Collective Dipole Interaction on Character of Dielectric Dispersion in Ferroelectric Phase Transition Region"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 12, Dec 71, pp 2607-2612

Abstract: The article considers dispersion relations with allowance for collective dipole interaction through a local field. The local field acting on the i-th type of dipoles is taken as equal to $F_i = E + \beta_i P$, where β_i are Lorentz factors of the corresponding polarization mechanisms. Then the polarization of the i-th mechanism $P_i = \alpha_i F_i$ and general polarization $P = \sum P_i = \sum \alpha_i E/(1-\sum \alpha_i \beta_i)$. The macroscopic permittivity

$$\varepsilon = 1 + 4\pi P/E = 1 + 4\pi\Sigma\alpha_i/(1 - \Sigma\alpha_i\beta_i). \qquad (1)$$

1/4

USSR

PETROV, V. M., Izvestiya Akademii Nauk SSR, Seriya Fizicheskaya, Vol 35, No 12, Dec 71, pp 2607-2612

Let only one polarization mechanism undergo dispersion in the frequency range considered: for example, i = 1, with $\alpha_1^*(\omega) = \alpha_0(1-\omega^2/\omega_0^2+j\omega T)-1$. Then, separating in (1) the first term from the sums, we obtain

$$\varepsilon^*(\omega) = \varepsilon_\infty + \frac{a}{\Delta - \omega^2/\omega_0^2 + j\omega T} \qquad (2)$$

$$\varepsilon^*(\omega) = \varepsilon_\infty + \frac{a\omega_0^2}{\omega'^2 - \omega^2 + j\omega\gamma} = \varepsilon_\infty + \frac{\varepsilon_0 - \varepsilon_\infty}{1-\omega^2/\omega'^2 + j\omega/\omega_r} \qquad (3)$$

From (2) and (3) the real and imaginary permittivity components

2/4

USSR

PETROV, V. M., Izvestiya Akademii Nauk SSR, Seriya Fizicheskaya, Vol 35, No 12, Dec 71, pp 2607-2612

$$\varepsilon' = \varepsilon_\infty + \frac{a(\Delta - \omega^2/\omega_0^2)}{(\Delta - \omega^2/\omega_0^2)^2 + \omega^2\tau^2} = \varepsilon_\infty + \frac{a\omega_0^2(\omega'^2 - \omega^2)}{(\omega'^2 - \omega^2)^2 + \omega^2\gamma^2}, \quad (4)$$

$$\varepsilon'' = \frac{a\omega\tau}{(\Delta - \omega^2/\omega_0^2)^2 + \omega^2\tau^2} = \frac{a\omega_0^2\omega\gamma}{(\omega'^2 - \omega^2)^2 + \omega^2\gamma^2}. \quad (5)$$

Expressions (3) and the right-hand sides of (4), (5) formally coincide with dispersion relations obtained without consideration of collective interaction. For ordinary dielectrics with a low ε_0, where $\Delta \approx 1$, the collective dipole interaction changes only slightly. the dispersion parameters $\Delta\varepsilon = \varepsilon_0 - \varepsilon_\infty$, ω', ω_r and does not lead to any qualitative differences. But in the case of ferroelectrics for which Δ is very small ($\sim 10^{-2}$-10^{-3}) and vanishes at the Curie point T_c, the dispersion parameters change very markedly, being

3/4

USSR

PETROV, V. M., Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 35, No 12, Dec 71, pp 2607-2612

constants no longer but changing sharply with the least variation in the microscopic parameters α_i, β_i as a result of an applied electric field, pressure, temperature, etc. Thus, quantitative differences in Δ, which characterizes the collective dipole interaction, lead to quantitative peculiarities in the dispersion of ferroelectrics. The resultant relations, which are general and use no specific molecular mechanism, must be considered in the analysis and interpretation of experimental results on dispersion in ferroelectrics and for finding the microscopic parameters of dipoles from them.

4/4

USSR

UDC 620.1:621.315.61.01:537.226

PETROV, V. M., KRYNETSKAYA, S. A., BUKSHTAM, B. M. (Moscow Institute of Steel and Alloys)

"Measurement of SHF Permittivity of (Ba, Sr)RiO_3 Paraelectrics in Transverse Bias Fields"

Tomsk, Izvestiya VUZ Fizika (News of the Higher Educational Institutions, Physics), No 9(112), 1971, pp 20-25

Abstract: An instrument is described that has been developed for measuring the SHF permittivity by the dielectric resonance method. A cylindrical sample is placed within the concentrated portion of a magnetic field in a waveguide. Resonance is detected by a probe placed at the trough of the standing waves. The dielectric resonance points are crossed by changing the temperature and dielectric permittivity of the samples. A diagram of the experimental equipment is shown.

The tangent of the loss angle and permittivity of the ceramic $BaTiO_3$ and of solid, paraelectric phase solutions of $BaTiO_3$ and $SrTiO_3$ were measured in the 10-cm range at temperatures above the Curie point, both with and without the transverse bias field.

1/2

USSR

PETROV, V. M. et al, Izvestiya VUZ Fizika, No 9(112), 1971, pp 20-25

It was found that a transverse field decreases the permittivity of the samples, but to a lesser degree than a longitudinal field. It is suggested that the dielectric nonlinearity mechanism in paraelectrics is due principally to the saturation of the electron-ion polarization and not to the field orientation of the domains remaining above the Curie point.

Orig. art. has 4 figs. and 15 refs.

2/2

PETROV, V. M.

SO: JPRS 54396
03 Nov 1971

SPACE MEDICINE

UDC 629.78.067:614.876

PROVIDING RADIATION FLIGHT SAFETY FOR THE 'SOYUZ-9' SPACESHIP CREW

[Article by Ye. I. Vorob'yev, I. V. Getselev, Yu. G. Grigor'yev, V. I. Yefimov, N. S. Zatsepa, Ye. Ye. Kovalev, V. D. Nikitin, V. N. Obridko, V. M. Petrov, V. V. Tel'tsov and A. V. Sedov; Moscow, Kosmicheskaya Biologiya i Meditsina, Russian, Vol 5, No 4, pp 29-33, 1971, submitted for publication 28 December 1970]

During flight of the "Soyuz-9" ship, as on earlier flights of Soviet manned spaceships, necessary measures were taken for ensuring crew radiation safety. The general approaches and principles serving as a basis for radiation protection have been set forth in earlier published studies (Yu. M. Volynkin, et al., 1964; Yu. G. Grigor'yev, et al., 1967; Ye. I. Vorob'yev, et al., 1969).

Accordingly, during the period of preparations for this flight an evaluation was made of the radiation conditions along the trajectory of the "Soyuz-9" ship, having the following principal characteristics: mean apogee ~250 km, mean perigee ~225 km, angle of inclination of orbital plane to the equatorial plane 51.7°. An analysis revealed that in the case of absence of powerful proton solar flares the radiation conditions will be determined by galactic cosmic radiation, the contribution of the proton component of the earth's radiation belt in the zone of the Brazilian magnetic anomaly, and the electron component of the belt in the high-latitude segments of the flight trajectory. The total dose due to galactic cosmic radiation and the earth's radiation belt, according to computations, must not exceed 0.25 rad. However, an examination of the ship trajectory in L,B coordinates indicated the presence of trajectory segments in which the geomagnetic shielding effect was considerably attenuated and the geomagnetic threshold for protons was ~100 MeV. A possible decrease in this threshold during the development of several successive solar flares, whose probability was not excluded due to the flight duration, made it necessary to have an effective forecast and careful monitoring of radiation conditions during the entire flight.

USSR

UDC 537.311.33

PETROV, V. M., BELOV, V. V., SHALYAPINA, L. M., and FIGUROVSKIY, YE. N.,
Moscow Institute of Steel and Alloys

"Identification of Narrow-Zone Alloys with Variable Composition"

Moscow, Izvestiya Akademii Nauk SSSR, Neorganicheskiye Materialy, Vol 10, No 3, Mar 74, pp 418-422

Abstract: Single crystals of $Cd_xHg_{1-x}Te$ ($0.2 \leqslant x \leqslant 0.5$), with electron concentrations (difference between donor and acceptor concentrations) at 77°K equal to approximately 10^{16}-10^{14} cm^{-3} and mobility of about 105-103 $cm^2/v\text{-}sec$, were used to study the spectral distribution of quantum yield of the internal photoeffect. The lifetime of charge carriers and rate of surface recombination were determined. A table lists the possible methods of identifying narrow-zone alloys and the smallest sample size that can be used for each method. The prospective use of the quantum yield growth effect is indicated in the short-wave region for identifying small samples of the single crystals used and other narrow-zone phases of variable composition. Two figures, one table, 18 bibliographic references.

1/1

USSR

UDC [537.226+537.311.33]:[537+535]

PETROV, V. M., and MARTYNOVA, S. V.

"Dielectric Dispersion in $BaTiO_3$ Single Crystals as a Function of Their Domain Structure"

V sb. Segnetoelektriki i okisnyye poluprovodniki (Ferroelectrics and Oxide Semiconductors -- Collection of Works), Dnepropetrovsk, 1971, pp 91-99 (from RZh Fizika, No 12, Dec 71, Abstract No 12Ye1177)

Translation: The dielectric permeability ε and tan δ were measured as a function of frequency in the range 1 kHz - 5000 MHz and of the uniaxial pressure at frequencies of 1 kHz and 30, 300, and 200 MHz for c-domain single crystals of $BaTiO_3$. It was established that ε drops with an increase of frequency over the entire range indicated and not only in the region of piezoelectric resonance. Losses increase and in the ultrahigh-frequency region tan δ of c-domain crystals reaches 0.3-1. It is concluded that relaxation of 180° domain walls with a wide relaxation time interval exists in addition to piezoresonance. With the application of pressure along the c-axis ε and tan δ increases at all frequencies so that at 300 MHz tan δ passes through a maximum at a pressure of about 100 kG/cm^2. The average relaxation frequency increases with an increase of pressure, which fact is explained by reduction of the grain structure. V. M. Petrov.

1/1

Stress Analysis and Stability Studies

USSR

UDC: 539.3

PETROV, V. M., CHERNOUS'KO, F. L., Moscow

"On the Equilibrium of a Fluid Bounded by a Flexible Film"

Moscow, Izvestiya AN SSSR: Mekhanika Tverdogo Tela, No 4, Jul/Aug 71, pp131-142

Abstract: The authors consider some problems in the statics of a fluid confined by a vessel with a flexible nonexpandable film. The possible forms of equilibrium are determined for the two-dimensional problem, and their stability is studied. A numerical solution is found for one nonlinear axisymmetric problem. The problems considered are of interest in connection with the study of the behavior of a liquid under conditions close to weightlessness, and are related to problems of the equilibrium of a fluid under the effect of forces of gravity and surface tension.
The authors thank R. D. Soldatov for assistance with the calculations.

1/1

Semiconductor Technology

USSR

UDC 546.48'28'181.1 : 666.1

AKSENOV, V. V., PETROV, V. M., and KHARAKHORIN, F. F.

"Semiconductor Properties of Vitreous $CdSiAs_2$"

Moscow, Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 10, Oct 70, pp 1881-1882

Abstract: Experiments show that the vitrifaction of $CdSiAs_2$ in sufficient quantities for study requires much greater melt cooling rates than for $CdGeAs_2$. The vitreousness of the material was established visually, as well as from the absence of lines on X-ray patterns. The band gap of $CdSiAs_2$ is lower in the vitreous state (1.05 ev at 300° K) than in the crystalline state (1.62 ev at 80° K). The greater band gap of $CdSiAs_2$ glass than $CdGeAs_2$ (0.75 ev) or $CdGeP_2$ (0.9 ev) glass is in agreement with existing theories.

1/1

1/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--SEMICONDUCTOR PROPERTIES OF COGEAS SUB2-COSNAS SUB2 SYSTEM GLASSES -U-

AUTHOR-(04)-AKSENOV, V.V., PETROV, V.M., KHARAKHORIN, F.F., YURUSHKIN, B.I.

COUNTRY OF INFO--USSR

SOURCE--IZV. AKAD. NAUK SSSR, NEORG. MATER. 1970, 6(4), 826-7

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, PHYSICS

TOPIC TAGS--SEMICONDUCTOR PROPERTY, ARSENIDE, CADMIUM COMPOUND, TIN COMPOUND, GERMANIUM COMPOUND, PHOTOCONDUCTIVITY, FORBIDDEN BAND, GLASS, DOPED ALLOY, GOLD, OPTIC PROPERTY, ELECTRIC PROPERTY, POLYCRYSTAL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--2000/1453 STEP NO--UR/0363/70/006/004/0826/0827

CIRC ACCESSION NO--AP0125084

UNCLASSIFIED

2/2 026 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0125084

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. AN ATTEMPT WAS MADE TO PREP. CRYST. AND VITREOUS MATERIALS OF THE COMPN. CDSN SUBX GE SUB1-X AS SUB2. THE CRYST. SAMPLES WERE PREPD. BY THE BRIDGMAN METHOD. THE SAMPLES WERE POLYCRYST. FOR THE GIVEN GLASSES. VITRIFICATION OCCURS ONLY AT 0 SMALLER THAN OR EQUAL TO X SMALLER THAN OR EQUAL TO 0.5. THE TEMP. DEPENDENCE OF THE ELEC. COND. OF SEVERAL SAMPLES AND THE RESP. WIDTH OF THE FORBIDDEN BAND WERE DETD. GLASSES OF THE COMPN. X LARGER THAN OR EQUAL TO 0.20 WERE MEASURED ONLY TO 500DEGREESK, INASMUCH AS AT HIGHER TEMPS. THEY CRYSTD. DURING THE MEASUREMENTS, WHICH RESULTED IN A SHARP DECREASE IN THEIR ELEC. RESISTIVITY. SPECTRAL DISTRIBUTION OF THE ABSORPTION COEFF. FOR SAMPLES OF THICKNESS 150-300 MU WAS MEASURED AT ROOM TEMP. WITHIN THE PHOTON ENERGY RANGE 0.2-0.75 EV. THE SPECTRAL DISTRIBUTION CURVES FOR THE PHOTOCOND. AT ROOM TEMP. WERE DETD. AND FOUND TO BE RATHER DIFFUSE AT 0.5-2.5 MU. NO DIFFERENCE WAS OBSD. FOR SPECTRAL DISTRIBUTION OF PHOTOCOND. OF SAMPLES UNDOPED AND DOPED WITH 5 AT. PERCENT AU. A SLIGHT ADDNL. MAX. OF PHOTOCOND. AT SIMILAR TO 0.8 MU WAS OBSD., WHICH OBVIOUSLY MUST BE ATTRIBUTED TO THE PECULIARITIES IN THE BAND STRUCTURE OF THE MATERIAL. THE WIDTH OF THE FORBIDDEN BAND OF THE VITREOUS MATERIAL CDSN SUBX GE SUB1-X AS SUB2 (ON THE BASIS OF ELEC., OPTICAL, AND PHOTOELEC. MEASUREMENTS) CONSIDERABLY EXCEEDS THE CORRESPONDING VALUE FOR THE CRYSTAL, WHICH APPARENTLY ATTESTS TO A CHANGE IN THE SHORT RANGE ORDER. THE COMPN. DEPENDENCE OF THE WIDTH OF THE FORBIDDEN BAND HAS A MIN. NEAR X EQUALS 0.30.

UNCLASSIFIED

USSR

UDC 661.1:537.311.33

AKSENOV, V. V., PETROV, V. M., KHARAKHORIN, F. F., and YURUSHKIN, B. I.

"Semiconductor Properties of $CdGeAs_2$—$CdSnAs_2$ System Glasses"

Moscow, Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 4, Apr 70, pp 826-827

Abstract: The authors attempted to obtain crystalline and vitreous materials of the composition $CdSn_xGe_{1-x}As_2$. The crystalline specimens were prepared by the Bridgman method. Only ternary compounds themselves could be obtained as single crystals. Specimens of mixed composition were polycrystalline. Vitrification takes place only in the interval $0 \leq x \leq 0.5$. The vitreousness and homogeneity of the specimens underwent metallographic and x-ray phase analyses. The temperature dependence of the electrical conductance of several vitreous specimens was determined, and the spectral distribution of the absorption coefficient of specimens 150-300 microns in width was measured at

USSR

AKSENOV, V. V., et al., Izvestiya Akademii Nauk SSSR -- Neorganicheskiye Materialy, Vol 6, No 4, Apr 70, pp 826-827

room temperature in the photon energy range of 0.2-0.75 ev. The width of the forbidden zone of the vitreous material (according to electrical, optical and photoelectric measurement data) significantly exceeds the corresponding value for the crystal, which apparently indicates a change of short-range order. The width of the forbidden zone obtained from electrical measurement data exceeds the corresponding values obtained from optical and photoelectric measurements.

2/2

AT0032087 NUCLEAR SCI. ABST. 2/70 AR 0000

5363 (SLAC-Trans-103) ACCELERATING RESONATOR FOR THE VEPP-2 STORAGE RING. Veshcherevich, V. G.; Karliner, M. M.; Petrov, V. M.; Sedlyarov, I. K.; Shekhtman, I. A. (Akademiya Nauk SSSR, Novosibirsk. Institut Yadernoi Fiziki). Translated by T. Watt for Stanford Linear Accelerator Center, Calif.), from Russian Preprint No. 272. 12p. Dep. CFSTI.

The resonator of the VEPP-2 storage ring operates in two oscillation modes: the antiphase mode (natural frequency 75 MHz, shunt resistance about 1 Mohm) and in the inphase mode (natural frequency 25 MHz, effective shunt resistance about 7.5 kohm). The operating accelerating voltage of up to 300 kV at the third-harmonic of the rotational frequency is ensured by the first mode. The second mode is used to recapture the particles from three separatrices onto one. Full account is taken in the resonator design of the required spectrum of higher natural frequencies, so that coherent synchrotron and betatron oscillations are adequately damped out. (auth)

1/1 19700273 19

AT0 032088 NUCLEAR SCI. ABST. 2/70 UR0000

5364 (SLAC-Trans-104) HIGH-FREQUENCY POWER SUPPLY OF THE VEPP-2 STORAGE RING. Gorniker, E. I.; Karliner, M. M.; Petrov, V. M.; Petukhov, V. Y.; Shekhtman, L. A. (Akademiya Nauk SSSR, Novosibirsk. Institut Yadernoi Fiziki). Translated by T. Watt for Stanford Linear Accelerator Center, Calif., from Russian Preprint No. 285. 12p. Dep. CFSTI.

The equipment described consists of two tuned power amplifiers, a master oscillator, and a control system. One of the amplifiers, operating at a wavelength of $\lambda_1 = 4$ m, has a rated power of 150 kW, so that it can be used to develop a voltage of up to 300 kV across the accelerating gap, which is necessary to ensure a short bunch length. The other amplifier has a rated power of 20 kW and operates at a wavelength $\lambda_2 = 12$ m. It is used to take the stored particles from three separatrices onto one. The common master oscillator and the control system ensure correct phasing of the voltages at the two frequencies. The control units stabilize the operation of the system, automate the operation of recapture, and contain feedback circuits which suppress electromechanical oscillations of the resonator. (auth)

1/1 19700274 19

JPRS 60185

2 October 1973

FORMATION OF RADIOACTIVE PARTICLES IN NUCLEAR EXPLOSIONS

Selected articles from the Russian-language journal Trudy Institute Eksperimental'noy Meteorologii, No. 21, 1971, Moscow.

CONTENTS

USSR

UDC 621.039.51

ISAYEV, N. V., and PETROV, V. N.

"Effectiveness of Eccentrically-Placed Absorbers in a Uranium-Water Critical Assembly"

Fiz. Yadern. Reaktorov [Nuclear Reactor Physics -- Collection of Works], No 2, Moscow, Atomizdat Press, 1970, pp 183-186 (Translated from Referativnyy Zhurnal--Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.62)

Translation: Certain results are described from a calculation and experimental study of the effectiveness of eccentrically placed absorbers in a uranium-water critical assembly. The effectiveness of the absorbers was determined experimentally by measuring the critical heights of the uranium-water assembly without the absorbers H_1 and with the absorbers H_2 with subsequent integration of the dependence $\delta\rho/\delta H = f(H)$ within limits of H_1 to H_2. The M_1 critical assembly used in the experiments, part of the "Lada" test stand, is a heterogeneous uranium-water system with type EK-10 fuel elements, placed in a square lattice with a spacing of 17 mm. The design of the control organs of the assembly allows the creation of "pure" active core zones, i.e., zones without absorbers. The experimental dependence $\delta\rho/\delta H = f(H)$ was produced by the method of supercritical tuning of the reactor. The reactivity was determined in

1/2

USSR

ISAYEV, N. V., and PETROV, V. N., Fiz. Yadern. Reaktorov, No 2, Moscow, Atomizdat Press, 1971, pp 183-186

shares of β_{eff} by the excursion time using the U^{235} inhour formula. The excursion time T was between 50 and 1,000 sec, allowing the contribution of prompt neutrons to reactivity to be ignored. When the load on the core was changed, dependences $\delta\rho/\delta H = f(H)$ and $\rho=\rho(H)$ were produced for the "pure" assembly. The dependence $\rho = \rho(H)$ was used to process the experimental data on the effectiveness of the absorbers. 7 biblio. refs.

2/2

UDC 621.039.51

USSR

ISAYEV, N. V., and PETROV, V. N.

"Effectiveness of Eccentrically-Placed Absorbers in a Uranium-Water Critical Assembly"

Fiz. Yadern. Reaktorov [Nuclear Reactor Physics -- Collection of Works], No 2, Moscow, Atomizdat Press, 1970, pp 183-186 (Translated from Referativnyy Zhurnal--Yadernyye Reaktory, No 3, 1971, Abstract No 3.50.62)

Translation: Certain results are described from a calculation and experimental study of the effectiveness of eccentrically placed absorbers in a uranium-water critical assembly. The effectiveness of the absorbers was determined experimentally by measuring the critical heights of the uranium-water assembly without the absorbers H_1 and with the absorbers H_2 with subsequent integration of the dependence $\delta\rho/\delta H = f(H)$ within limits of H_1 to H_2. The M_1 critical assembly used in the experiments, part of the "Lada" test stand, is a heterogeneous uranium-water system with type EK-10 fuel elements, placed in a square lattice with a spacing of 17 mm. The design of the control organs of the assembly allows the creation of "pure" active core zones, i.e. zones without absorbers. The experimental dependence $\delta\rho/\delta H = f(H)$ was produced by the method of supercritical tuning of the reactor. The reactivity was determined in

USSR

ISAYEV, N. V., and PETROV, V. N., Fiz. Yadern. Reaktorov, No 2. Moscow, Atomizdat Press, 1971, pp 183-186

shares of β_{eff} by the excursion time using the U^{235} inhour formula. The excursion time T was between 50 and 1,000 sec, allowing the contribution of prompt neutrons to reactivity to be ignored. When the load on the core was changed, dependences $\delta\rho/\delta H = f(H)$ and $\rho=\rho(H)$ were produced for the "pure" assembly. The dependence $\rho = \rho(H)$ was used to process the experimental data on the effectiveness of the absorbers. 7 biblio. refs.

2/2

USSR

UDC 621.039

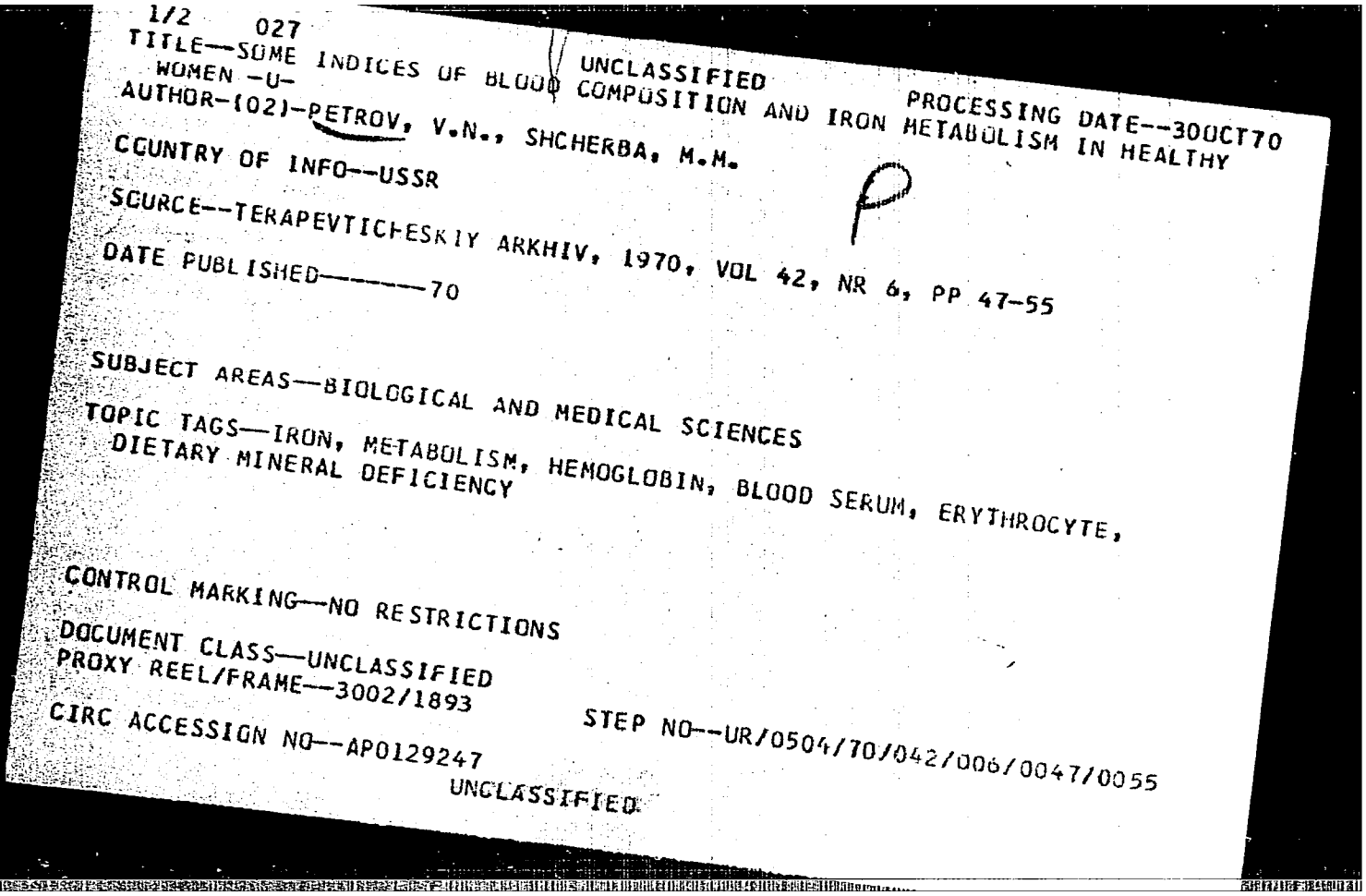
ISAYEV, N. V., and PETROV, V. N.

"Effectiveness of Eccentrically Placed Absorbers in a Uranium-Water Critical Assembly"

V sb. Fiz. yadern. reaktorov (Physics of Nuclear Reactors -- Collection of Works), No 2, Moscow, Atomizdat, 1970, pp 183-186 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V591)

Translation: Results of experiments and calculations are presented on the effectiveness of regulators in a uranium-water critical assembly with EK-1 fuel elements placed in a square lattice with a step of 17 mm. Experimental values were obtained by measuring the critical heights of the system with absorbers and without them. The effectiveness was determined as a function of the radius of the placement in the critical assembly of the control rods of B_4C (density 1.22 g/cm^3) in Al-tubes of diameter 10/9, 15/13, or 18/15 mm. The measurements are in good agreement with a perturbation theory calculation taking into account the depression of thermal neutron flux in the absorber. V. A. Pavshuk.

1/1



1/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70
TITLE--SOME INDICES OF BLOOD COMPOSITION AND IRON METABOLISM IN HEALTHY WOMEN -U-
AUTHOR-(02)-PETROV, V.N., SHCHERBA, M.M.
COUNTRY OF INFO--USSR
SOURCE--TERAPEVTICHESKIY ARKHIV, 1970, VOL 42, NR 6, PP 47-55
DATE PUBLISHED-------70
SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES
TOPIC TAGS--IRON, METABOLISM, HEMOGLOBIN, BLOOD SERUM, ERYTHROCYTE, DIETARY MINERAL DEFICIENCY
CONTROL MARKING--NO RESTRICTIONS
DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3002/1893
STEP NO--UR/0504/70/042/006/0047/0055
CIRC ACCESSION NO--AP0129247
UNCLASSIFIED

2/2 027 UNCLASSIFIED PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AP0129247

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE INDICES WERE STUDIED OF THE BLOOD COMPOSITION, HEMOGLOBIN CONCENTRATION IN THE BLOOD AND ERYTHROCYTE, PERCENTAGE OF HEMOTOCRYTE IN 577, AND IRON METABOLISM, IRON LEVEL AND UNSATURATED IRON BOUND CAPACITY OF THE BLOOD SERUM IN 210 PRACTICALLY HEALTHY WOMEN. INCIDENCE OF HYPOFERRIC ANEMIA CONSTITUTED 11PERCENT, LATENT HYPOFERRIA, IRON DEFICIENCY OF THE ORGANISM WITHOUT THE DEVELOPMENT OF ANEMIA, 22PERCENT. IT WAS SHOWN THAT ADDITIONAL LOSS OF IRON FROM THE ORGANISM DUE TO MENSTRUATION, PREGNANCY, DELIVERY, ABORTIONS AND NURSING MAY SERVE AS A CAUSE OF IRON DEFICIENCY. ABSORPTION OF RADIOACTIVE IRON (FE PRIME59) IN THE GASTROINTESTINAL TRACT OF WOMEN (55 PERSONS) IS HIGHER THAN IN MEN (10 PERSONS) CONSTITUTES CORRESPONDINGLY 10.2 AND 8.9PERCENT. COMBINATION OF A DECREASED LEVEL OF HEMOBLOBIN AND IRON WITH A RISE IN UNSATURATED IRON BOUND CAPACITY IN THE BLOOD SERUM AND PERCENTAGE OF IRON ABSORPTION IN SOME WOMEN TESTIFY TO GENUINE IRON DEFICIENCY OF THE ORGANISM.. UNADEQUATE IRON ABSORPTION IN THE ORGANISM ASSOCIATED, APPARENTLY, WITH INSUFFICIENT SUPPLY OF IRON WITH FOOD OR ITS SUPPLY IN A FORM POORLY ASSIMILATED IS A CAUSE OF STEADY IRON DEFICIENCY. FACILITY: KAFEDRA PROPEDEVTIKI VNUTRENNIKH BOLEZNEY I LENINGRADSKOGO MEDITSINSKOGO INSTITUTA IM. PAVLOVA.

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--18SEP70

1/2 017

TITLE--WELDING AND CUTTING OF STAINLESS STEELS -U-

AUTHOR--PETROV, V.N.

COUNTRY OF INFO--USSR

SOURCE--WELDING AND CUTTING OF STAINLESS STEELS (SVARKA I REZKA NERZHAVEYUSHCHUKH STALEY) 2ND ED. LENINGRAD. SUDOSTROYENIYE, 1970, 286PP

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--STAINLESS STEEL WELDING, STAINLESS STEEL TECHNOLOGY, METAL CUTTING, MONOGRAPH

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

STEP NO--UR/0000/70/000/000/0001/0286

PROXY REEL/FRAME--1984/0579

CIRC ACCESSION NO--AM0055324

UNCLASSIFIED

2/2 017 UNCLASSIFIED PROCESSING DATE--18SEP70
CIRC ACCESSION NO--AM0055324
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE BOOK CONTAINS NEW SPECIFICATIONS FOR EQUIPMENT OF SITES FOR ALL TYPES OF ARC WELDING, NEW CUTTING METHODS, CHARACTERISTICS OF ASSEMBLY AND WELDING OF STRUCTURES FROM UNIFORM AND DIFFERENT STEELS, ANALYSIS OF DEFECTS IN WELDED JOINTS. THE BOOK WAS WRITTEN FOR WELDERS EMPLOYED BY THE SHIP BUILDING INDUSTRY.

UNCLASSIFIED

USSR UDC: 621.317.341.3

PETROV, V. P., YEFIMENKO, Yu. G.

"Pulse Reflectometry in Circuits With Distributed Constants"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 156-160 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A387)

Translation: The principle of pulse probing is presented as a basis for pulse reflectometry. A number of problems which can be solved by this procedure are considered. One such problem is the investigation of the deviations in wave impedance caused by small nonhomogeneities. The convenience of such measurements determined the first applications of pulse reflectometry to the study of communications lines, especially cable lines. The further development of these principles involves the measurement of lumped nonhomogeneities and terminal impedors with high resolution. Of greatest interest is the use of pulse reflectometry for measuring the parameters of circuits with distributed constants, especially in the case where they are inaccessible to direct measurement. The solution of these problems takes two directions: 1) development of methods for analyzing and synthesizing

1/2

USSR

PETROV, V. P., YEFIMENKO, Yu. G., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2, Novosibirsk, 1970, pp 156-160

circuits with distributed constants in the time region; 2) creation of signal sources with a minimum leading edge and the corresponding oscilloscopes for registration of short-term transient processes. Current aspects of the use of pulse reflectometry make severe demands on the principal units of the equipment (the oscillator and indicator). These requirements are outlined. It is noted that the methods of pulse reflectometry make it possible to completely automate the process of measuring the parameters of transmission lines. Bibliography of 12 titles. E. L.

2/2

USSR

UDC: 621.317.023

PETROV, V. P., GUTINA, E. M., KONDAKOV, Yu. V.

"Basic Trends in the Development of Techniques for Measuring Circuit Parameters on Superhigh Frequencies"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 2), Novosibirsk, 1970, pp 52-57 (from RZh-Radiotekhnika, No 1, Jan 71, Abstract No 1A368)

Translation: The advancing development of measurement technology demands a sharp increase in the informational capacity of instruments, as well as improvement in existing methods of measurement and development of new ones. It is noted that the technical revolution in radio electronics accompanied by microminiaturization, the use of hybrid and integrated circuitry, etc. has been reflected to a great degree on the level of measurement technology in the microwave band as well. Among the new and promising trends, works may be singled out on improvement of panoramic methods of determining the characteristics of microwave modules over a broad frequency range, and also works involved with the further development of single-frequency methods, as

1/2

USSR

PETROV, V. P., et al., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 2, 1970, pp 52-57

well as works on the latest methods based on FM and pulse reflectometry in time and frequency regions. Some other areas of development are also examined. Bibliography of 17 titles. E. L.

2/2

USSR UDC: 621.317.73

PETROV, V. P., KONDAKOV, Yu. V.

"Methodological Problems in Automating the Measurement of Parameters in Circuits With Distributed Constants"

Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1 (Reports of the All-Union Scientific and Technical Conference on Radio Engineering Measurements. Vol. 1), Novosibirsk, 1970, pp 161-166 (from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12A365)

Translation: The authors point out the fundamental problems which have been defined up to the present time in the field of automating the measurement of parameters in circuits with distributed constants. Consideration is given to the general principles of constructing automatic measuring instruments, and to the possibilities of using them for measuring various systems of parameters, including structural systems. The concept of two different methods of automation is introduced: the dynamic method and the parametric method. Dynamic automation is possible in the frequency region, in the frequency-time region, and in the time region. Parametric automation is based on registration of a time-variable signal passing through the system to be investigated while some parameter of this system is varied. A table

USSR

PETROV, V. P., KONDAKOV, Yu. V., Dokl. Vses. nauchno-tekhn. konferentsii po radiotekhn. izmereniyam. T. 1, Novosibirsk, 1970, pp 161-166

is given with the characteristics of the methods from the standpoint of their possibilities. This table illustrates the differences in effetiveness of the methods. Dynamic methods which have been most extensively used in practice are inadequate in the frequency region. Accelerated development of other types of instruments is needed. Seven tables. E. L.

2/2

1/2 023 UNCLASSIFIED PROCESSING DATE--20NOV70

TITLE--N ALKYLATED 4,5,6,7 TETRAFLUORCINDOLES -U-

AUTHOR-(02)-PETROV, V.P., DARKHASH, V.A.

COUNTRY OF INFO--USSR

SOURCE--KHIM. GETEROTSIKL. SOEDIN. 1970, (3), 385-9

DATE PUBLISHED--------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--INDOLE DERIVATIVE, ELECTROLYTIC REDUCTION, ORGANIC NITRO COMPOUND, ALCOHOL, FLUORINATED ORGANIC COMPOUND, FLUORINE ISOTOPE, NMR SPECTRUM, ORGANIC SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3001/0222 STEP NO--UR/0409/70/000/003/0385/0389

CIRC ACCESSION NO--AP0126008

UNCLASSIFIED

UNCLASSIFIED PROCESSING DATE--20NOV70

2/2 023

CIRC ACCESSION NO--AP0126008

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. NITRO ALCS. WERE REDUCED ELECTROCHEM. AT MINUS 1.65 V ON HG CATHODE DURING 5 HR YIELD RNHCHR PRIME1 C(OH)R PRIMEPH.HCL (I) (R, R PRIME1, R PRIME2, M.P., AND PERCENT YIELD GIVEN): SHOWN ON MICROFICHE. FACILITY: NOVOSIBIRSK.

INST. ORG. KHIM., NOVOSIBIRSK, USSR.

UNCLASSIFIED

USSR

MOSKALEV, I. N., PETROV, V. P., STEFANOVSKIY, A. M.

"Use of Open, Barrel-Shaped Resonators for the Study of a Plasma"

Leningrad, Zhurnal Tekhnicheskoy Fiziki, August 1970, pp 1692-1700

Abstract: Simple waveguides with which it is possible, with satisfactory accuracy, to determine the natural frequencies of open, barrel-shaped resonators are described. In addition, results of a more rigorous theory, based on the solution of a wave equation which takes the boundary conditions into account, are obtained. Theoretical conclusions are compared with experimentally measured distributions of the fields in a resonator operating in the 8-mm band. Data on the measurement of the density of the plasma obtained with these resonators agree with the results of probe measurements.

The article includes 20 equations, 6 figures, and one table. There are three references.

1/1

USSR

UDC: 62-507.019.3

PETROV, V. S.

"Approximation Method for Evaluating Reliability of a Finite Automation with Restoring Units"

Riga, Avtomatika i Vychislitel'naya Tekhnika, No 2, 1972, pp 23-30

Abstract: A method is presented for approximate determination of the probability of failure-free operation of a redundant automation consisting of any number of parallel-connected subautomata and restoring units. The relative error of the method suggested is evaluated. An example is presented.

1/1

USSR UDC 535.376

BORODIN, YU.P., BORONIN, V.G., KARSV, YU.A., KRUGLOV, I.I., MIKHAYLOV, L.I., PAVLOVA, V.A., PETROV, V.S., RYZHIKOV, I.V.

"Study Of The Region Of Radiative Recombination In Electroluminescent Structures Based On Diffusion And Epitaxial Specimens Of Gallium Arsenide"

V sb. Elektrolyuminestsentsiya tverd. tel. (Electroluminescence Of Solid Bodies--Collection Of Works), Kiev, "Nauk.dumka," 1971, pp 54-58 (from RZh--Elektronika i yeye primeneniye, No 11, Nov 1971, Abstract No 11B363)

Translation: A comprehensive study is presented of the electrical and optical properties of the region of radiation recombination in diffused and epitaxial specimens. The distribution is obtained of the impurity in the p-region of diffused and epitaxial specimens by means of a measurement of the photoluminescent spectra. The experimentally determined transition time is: up to 1000 nanosecond with epitaxial specimens and 50 nanosec with diffused. The external quantum efficiency at T =300° K of the diffused and epitaxial specimens equals one percent and five percent, respectively, and for a construction with the maximum possible external quantum efficiency ~9 percent. 6 ill. 5 ref.Summary.

1/1

USSR

UDC 911.3.616.981.452

KLASSOVSKIY, L. N., and PETROV, V. S.

"Classification of the Variation Phenomenon in Plague Bacteria From an Ecological Basis"

V sb. Probl. osobo opasn. infektsiy (Problems of Especially Dangerous Infections -- collection of works) Vyp. 5(15), Saratov, 1970, pp 5-11, (From RZh-Meditsinskaya Geografiya, No 4, Apr 71, Abstract No 4.36.90)

Translation: The following classification scheme is advanced for the emergence of variation in plague bacteria: A. Non-hereditary variation: 1. Phenotype variation within limits of reaction norm. 2. Variation outside reaction norm limits (pathological). B. Hereditary variation: 1. Geographic-ecological variation. 2. Variation leading to the emergence of atypical strains in natural conditions. 3. Variation leading to the emergence of stable drug-resistant forms. 4. Variation in laboratory populations. 5. Atavism and Dissociation. Variation in plague bacteria in nature has the character of population adaptation occurring in the process of host transfer. The emergence of atypical strains is seem as a phenomenon of adaptive order within the framework of the micropopulation. 1/1

UDC 628.346

USSR

ZOLOTAVIN, V. L., KONSTANTINOVICH, A. A., SANATINA, V. N., PUSHKAREV, V. V., and PETROV, V. S.

"Deactivation of Radioactive Sewage by the Method of Two-stage Coagulation of Iron Hydroxide"

Leningrad, Radiokhimiya, Vol 13, No 1, 1971, pp 164-166

Abstract: Comparison of the two-stage coagulation process with the single stage method showed that with identical consumption of iron sulfate the deactivation of sewage is increased 12-20 fold in respect to the α-activity, and 2-5 fold in respect to the β-activity when the two-stage method was used.

1/1

- END -

USSR

UDC 911.3.616.981.452

PETROV, V. S.

"The Structure of Vector Zones and Some Spatial Laws Governing Natural Foci of Plague"

V sb. 5-ya Mezhvuz. zoogeogr. konferentsiya "Vliyanie antropogen. faktorov na formir. zoogeogr. kompleksov" Ch. I (Fifth Joint Higher Education Institution Zoogeographic Conference on the Effect of Anthropogenic Factors on the Formation of Zoogeographic Complexes. Part I -- collection of works), Kazan, 1970, pp 104-105 (from RZh- 36. Meditsinskaya Geografiya, No 1, Jan 71, Abstract No 1.36.118 by L. Naletova)

Translation: The zone of natural plague foci is characterized by a specific spatial structure which is defined by a number of factors, including the structure of vector zones and reservoir zones. Of decisive significance in the maintenance of the stability of foci is the great and constant number of chief reservoirs and the narrow range of the more specific and mass vectors. The effect of man on the structure of the plague zone is usually confined to action against the structure of the zone of the chief reservoir.

1/1

Acc. Nr.: AP0029107 Ref. Code: UR 0246

PRIMARY SOURCE: Zhurnal Nevropatologii i Psikhiatrii, 1970, Vol 70, Nr 1, pp 106-115

ULTRASTRUCTURAL FEATURES OF THE NUCLEAR AND CYTOPLASTICAL ELEMENTS IN THE CORTICAL BRAIN CELLS OF PATIENTS WITH AND WITHOUT EPILEPTICAL SEIZURES

V. S. Petrov

In the area of brain neoplasmas there are not only changed nervous cells, but singular neurons with a relatively preserved structure and a morphologically different endoplasmatic reticulum. In most of the brain neurons and oligodendrocytes of patients without epileptical fits there is a relatively small content of filamental and granular structures in the nuclei, as well as in the ribosomes, Palade granules, mitochondria, in the membranes of the Golgi apparatus, etc. In similar brain cells of patients with epileptical attacks there is not only an enlarged mitochondria with electronooptical lucid matrix and vesicules of the Golgi apparatus, but inculsions with a different ultrastructural organization and a relative preservation of the elements of the nuclei and nucleoli.

4/1

REEL/FRAME

19680618

2 MB

USSR

PETROV, V. V.

"The Order of Growth of a Sum of Independent Random Quantities"

Teoriya Veroyatnostey i yeye Primeneniya [The Theory of Probabilities and Its Applications], 1973, Vol 18, No 2, pp 358-360 (Translated from Referativnyy Zhurnal Kibernetika, No 10, 1973, Abstract No 10V39)

Translation: The set of functions $\psi(x)$ such that each function $\psi(x)$ is positive and does not decrease in area $x>x_0$ with a certain x_0 and the series $\sum_n \frac{1}{n\psi(n)}$ converges (diverges) will be represented by Ψ_c (or Ψ_d). The following theorems are proven in this article.

Theorem 1. Suppose $\{X_n : n = 1, 2, \ldots\}$ is a sequence of random quantities,

$$S_n = \sum_{k=1}^{n} X_k,$$

$$\mathrm{E}|X_n|^\rho < \infty \quad (n = 1, 2, \ldots) \tag{1}$$

for a certain positive $\rho \leq 1$. Let us assume $A_n = \sum_{k=1}^{n} \mathrm{E}|X_k|^\rho$. If

$$A_n \to \infty, \tag{2}$$

PETROV, V. V., Teoriya Veroyatnostey i yeye Primeneniya, 1973, Vol 18, No 2, pp 358-360

then

$$S_n = o((A_n\psi(A_n))^{1/p}) \text{ a.c.} \tag{3}$$

for any function $\psi(x) \in \Psi_c$.

Here and subsequently, a.c. represents almost certainly; passages to the limit are performed as $n \to \infty$.

Theorem 2. Suppose X_n is a sequence of random quantities satisfying conditions (1) for a certain positive $p \leq 1$, and suppose S_n and A_n are defined as in Theorem 1. If

$$A_n = O(\frac{n^q}{\psi(n)}) \tag{4}$$

for a certain function $\psi \in \Psi_c$ and a certain $q>0$, then

$$S_n n^{-q/p} \to 0 \text{ a.c.} \tag{5}$$

USSR

PETROV, V. V., Teoriya Veroyatnostey i yeye Primeneniya, 1973, Vol 18, No 2, pp 358-360

On the other hand, for any $p>0$, $q>1$ and any function $\psi \in \Psi_d$ such that $n^{q-1}/\psi(n)$ does not decrease in area $n>n_1$ with a certain n_1, there is a sequence of independent symmetrical random quantities $\{X_n\}$ with finite absolute moments of any order for which (4) is fulfilled, while (5) does not occur. Author's view

3/3

USSR

UDC: 621.375.82

PETROV, V. V., KRYUCHIN, A. A., SALYUK, L. I., TOKAR', A. P.

"Focusing Laser Emission in Optical Memory Devices"

Kiev, Fokusirovka lazernogo izlucheniya v opticheskikh zapominayushchikh ustroystvakh. AN USSR. In-t elektrodinam. (cf. English above. UkrSSR Academy of Sciences. Institute of Electrodynamics), Preprint No 54, 1973, 17 pp, ill., 7 k., mimeo. (from RZh-Fizika, No 11, Nov 73, abstract No 11D1441 [résumé])

Translation: Concentration of laser emission into a spot of fairly small dimensions is considered. Different types of focusing systems are analyzed. Graphs are presented showing the emission density and size of the focused spot as functions of the parameters of the optical system. It is shown that in an optical memory device with discrete data recording it is advisable to use a focusing system with telescope.

1/1

USSR

Probability Theory and Mathematical Statistics
A. Probability Theory

USSR

PETROV, V. V. and SHIROKOVA, I. V.

"Exponential Rate of Convergence in the Law of Large Numbers"

Vestn. Leningr. Un-ta [Herald of Leningrad University], 1973, No 7, pp 155-157 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V8)

Translation: The purpose of this article is to prove the following two theorems. Theorem 1. Let $\{X_n;\ n = 1, 2, \ldots\}$ be a sequence of independent, identically distributed random quantities, $S_n = \sum_{k=1}^{n} X_k$. Then the following conditions are equivalent: (A) there are positive constants $\rho<1$, ε and C such that $P(S_n \leq n\varepsilon) \leq C\rho^n$ for all sufficiently large n, (B) there is a number $T > 0$ such that $Ee^{tX_1} < \infty$ for $0 \leq t \leq T$.

Theorem 2. Let $\{X_n;\ n = 1, 2, \ldots\}$ be a sequence of independent

1/2

USSR

PETROV, V. V. and SHIROKOVA, I. V., Vestn. Leningr. Un-ta, 1973, No 7, pp 155-157

random quantities, $S_n = \sum_{k=1}^{n} X_k$, and suppose $\frac{S_n}{n} \xrightarrow{P} 0$. If condition (A) is fulfilled, then $Ee^{tx_j} < \infty (j = 1, 2, \ldots)$ for $0 \leq t \leq \frac{1}{2\varepsilon} \log \frac{1}{\rho}$.

Author's view

2/2

USSR UDC 539.3

PETROV, V. V.

"One Method of Constructing Sequential Approximations in the Theory of Flexible Plates"

V sb. Raschet prostranstv. sistem v stroit. mekh. (Calculation of Three-Dimensional Systems in Structural Mechanics -- Collection of Works), Saratov, Saratov University, 1972, pp 17-22 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3V176)

Translation: A variation on the consecutive approximation method for the solution of problems in the theory of flexible plates is presented that is based on the joint application of the Bubnov and Bubnov-Vlasov methods. The displacement function u in the solution of the initial system of equations is sought in the form

$$u(\xi, \eta) = fX(\xi)Y(\eta)$$

where f is an unknown function of the amplitude of the bending, $X(\psi)$ and

USSR

PETROV, V. V., Raschet prostranstv. sistem v stroit. mekh., Saratov, Saratov University, 1972, pp 17-22

$Y(\varepsilon)$ are approximating functions expressed in accordance with the given boundary conditions and the force function ϕ is in the form

$$\varphi(\xi, \eta) = \Psi(\xi)\chi(\eta)$$

where Ψ (ψ) is the unknown function and $\chi(\varepsilon)$ is the approximating function, the form of which is determined by the boundary conditions. Achievement of the Bubnov-Papkovich and Bubnov-Vlasov methods reduces the initial system of partial differential equations to an ordinary differential equation and a nonlinear algebraic equation. After obtaining the solution the refinements are obtained in the following manner. The expression for the function Ψ in one of the equations of the initial system is presented and the linear partial differential equation relative to u is obtained. By representing the displacement function in the form

$$u(\xi, \eta) = U(\xi)Y(\eta)$$

USSR

PETROV, V. V., Raschet prostranstv. sistem v stroit. mekh., Saratov, Saratov University, 1972, pp 17-22

where $Y(\varepsilon)$ is the same as before, and $U(c)$ is a certain unknown function and by following the Bubnov-Vlasov procedure the ordinary differential equation relative to the function U is obtained. By solving this equation U is found and then u. By using the new value of U and the equations of the initial system, the values of the function Ψ are made more precise. The process of refining the function u and Ψ is repeated until obtaining the necessary accuracy. V. B. Silkin.

3/3